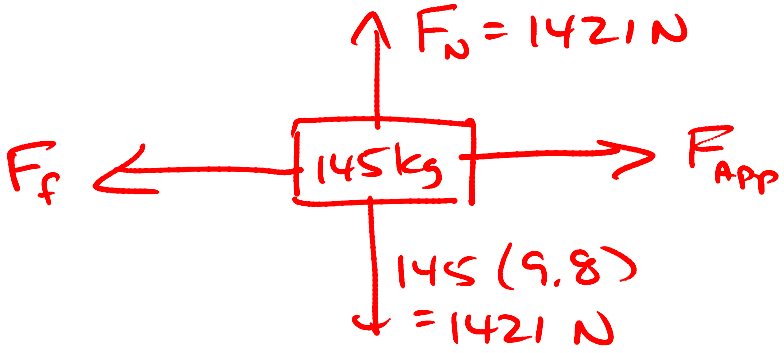
Example #10. A muscular physics student needs to move a 145 kg crate across the room over a floor where $\mu_s = 0.370$ and $\mu_k = 0.210$.

a) What minimum horizontal force is required to *just* start the crate sliding?

b) If this force continues to be applied, what will be the rate of acceleration?



a) $F_{App} = F_{f\,(static)} = \mu_s F_N$

$= .370(1421)$

$F_{App} = 526$ N

b) When moving, $F_f = \mu_k F_N$

$= .210(1421)$

$= 298$ N

$F_{Net} = 526 - 298 = 228$ N

$F_{Net} = ma$

$228 = 145a$

$\boxed{a = 1.57\ m/s^2}$